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FIG. 1

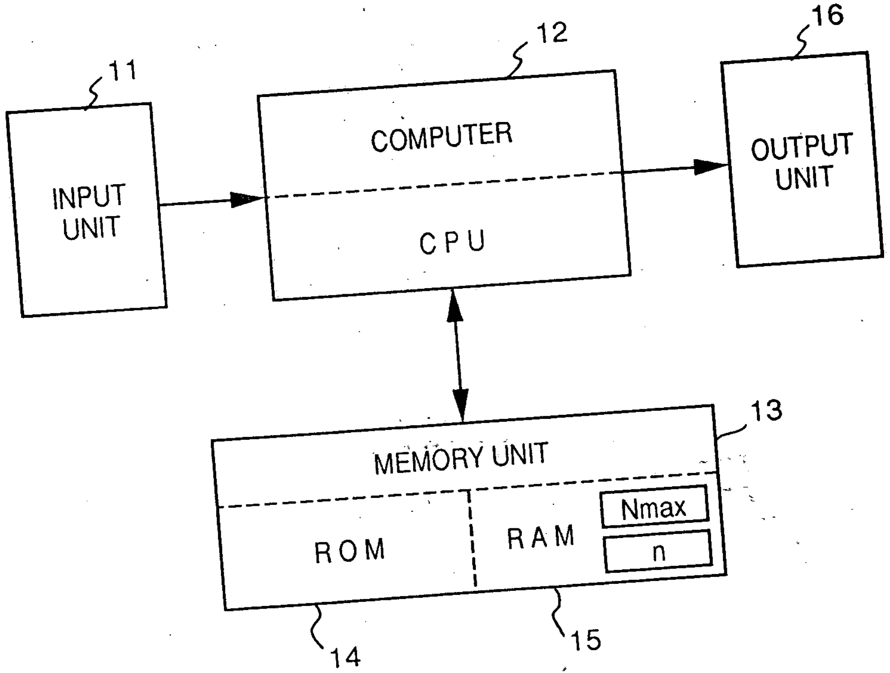
11
INPUT UNIT
12
COMPUTER
CPU
16
OUTPUT UNIT
13
MEMORY UNIT
ROM
RAM
Nmax
n
14
15

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FIG. 2

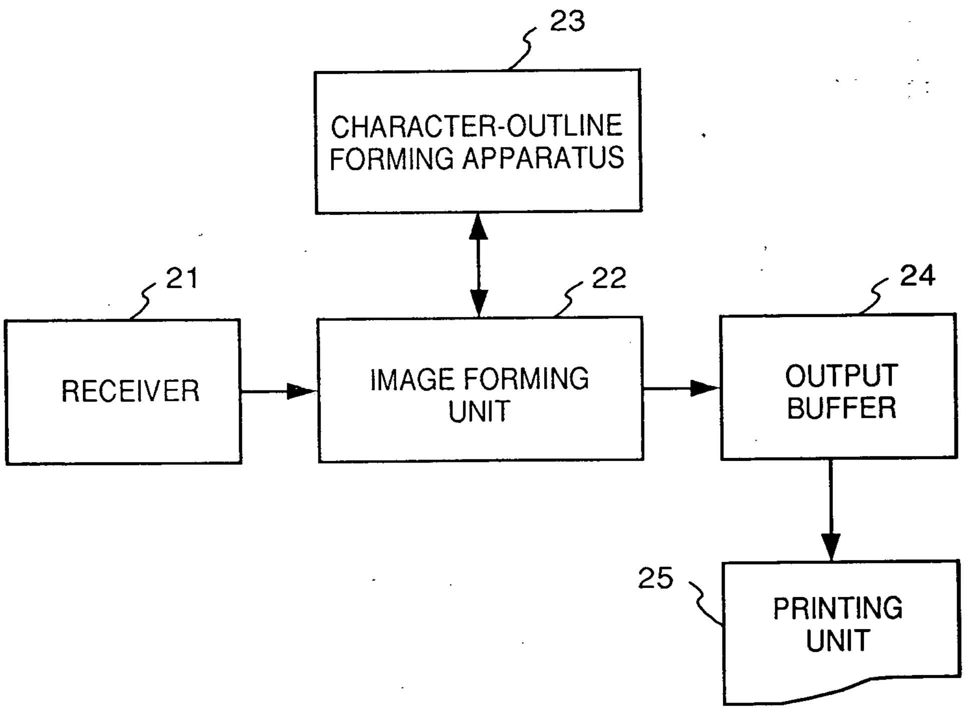
23
CHARACTER-OUTLINE FORMING APPARATUS
21
RECEIVER
22
IMAGE FORMING UNIT
24
OUTPUT BUFFER
25
PRINTING UNIT

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FIG. 3

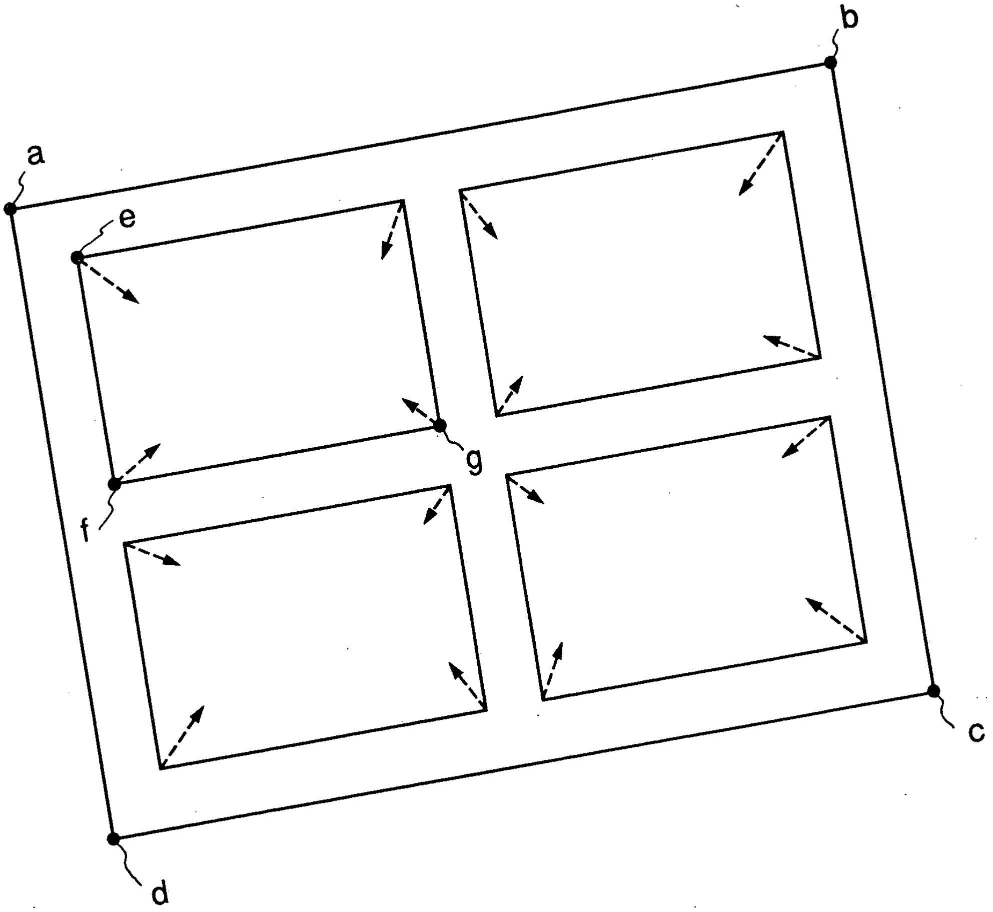

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FIG. 4

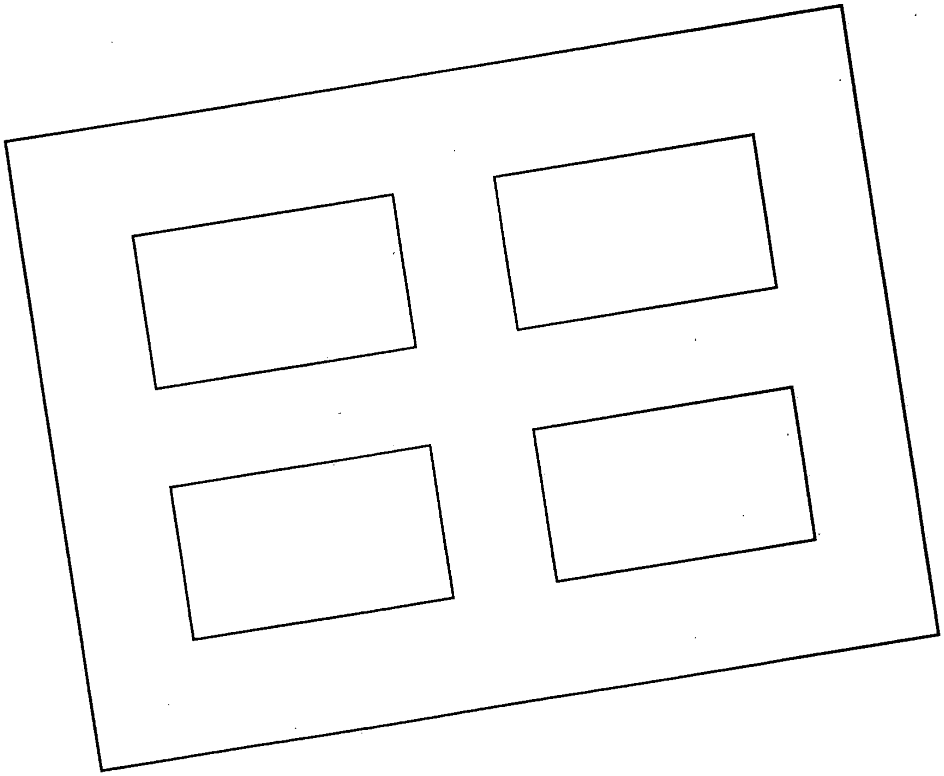

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FIG. 5

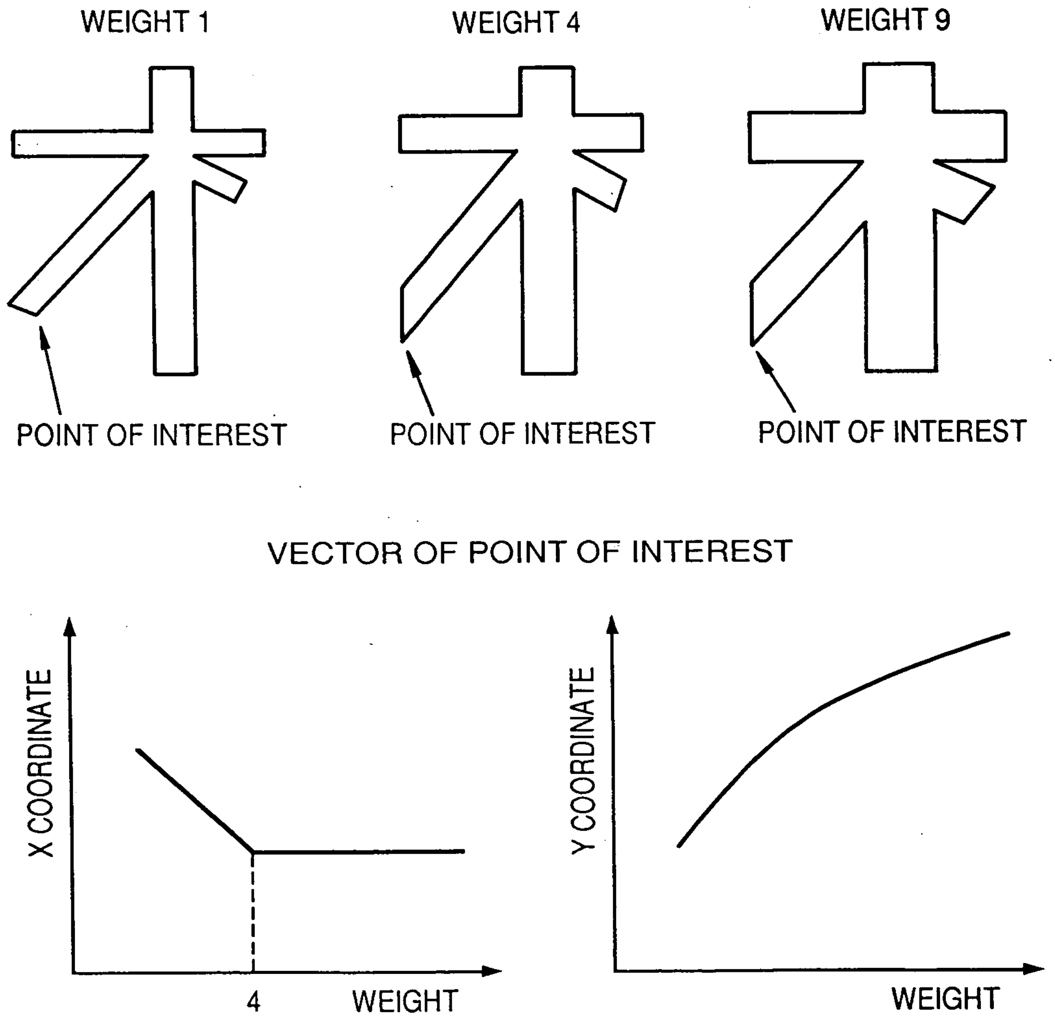
WEIGHT 1
WEIGHT 4
WEIGHT 9
POINT OF INTEREST
POINT OF INTEREST
POINT OF INTEREST
VECTOR OF POINT OF INTEREST
X COORDINATE
4
WEIGHT
Y COORDINATE
WEIGHT

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FIG. 6

	FLAG 1	FLAG 2	FLAG 3	FLAG 4	X	Y	VEC-X	VEC-Y
CONTROL-POINT a	START	STR-LINE	0	0	50	50		
CONTROL-POINT b		STR-LINE	0	0	800	50		
CONTROL-POINT c		STR-LINE	0	0	800	600		
CONTROL-POINT d	END	STR-LINE	0	0	50	600		
CONTROL-POINT e	START	STR-LINE	1	1	100	100	50	50
CONTROL-POINT f		STR-LINE	1	1	100	300	50	-20
CONTROL-POINT g		STR-LINE	1	1	400	300	-20	-20
	------	------	------	------	------	------	------	------

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FIG. 7

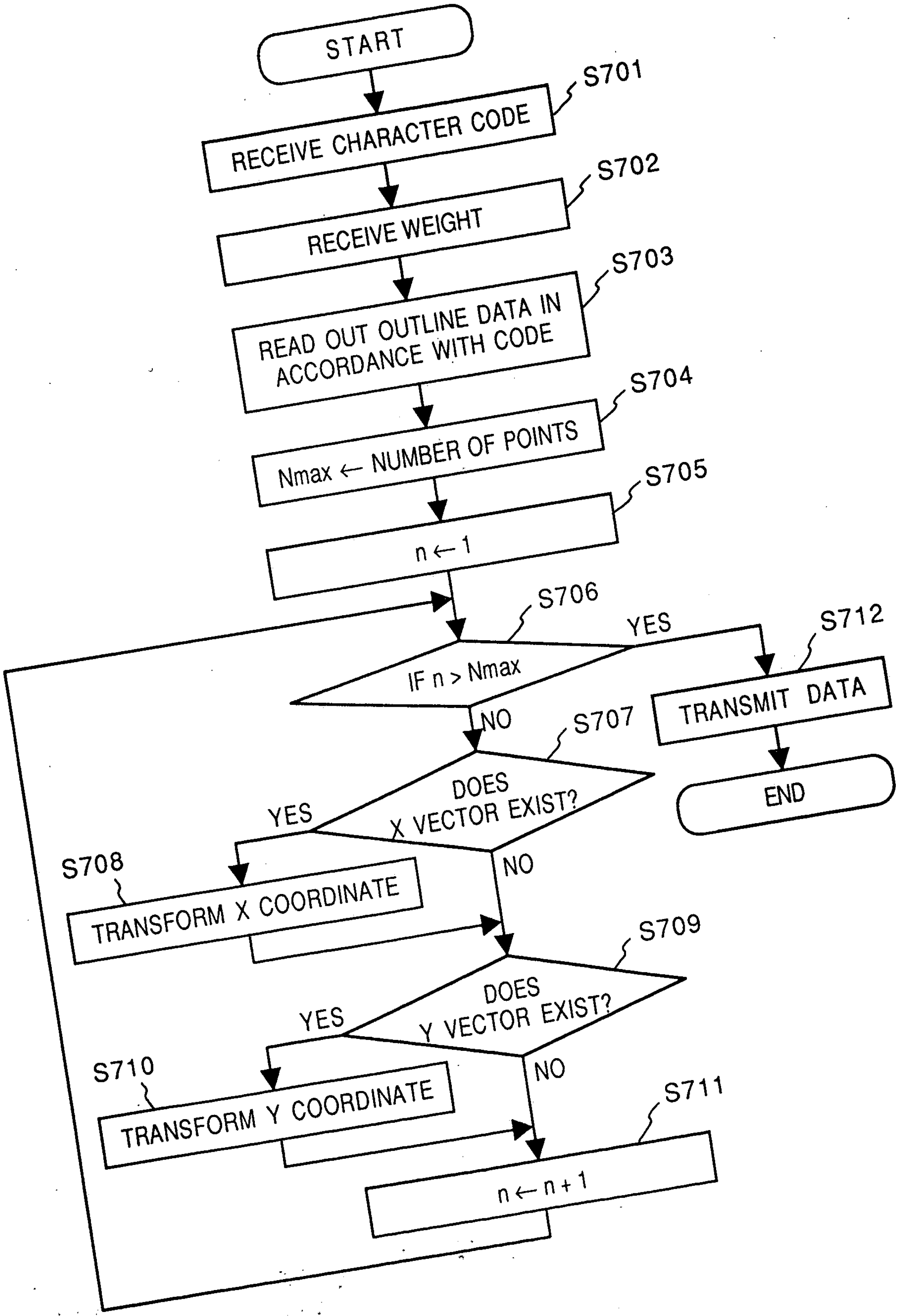
START
S701
RECEIVE CHARACTER CODE
S702
RECEIVE WEIGHT
S703
READ OUT OUTLINE DATA IN ACCORDANCE WITH CODE
S704
Nmax ← NUMBER OF POINTS
S705
n ← 1
S706
IF n > Nmax
YES
S712
TRANSMIT DATA
END
NO
S707
DOES X VECTOR EXIST?
YES
S708
TRANSFORM X COORDINATE
NO
S709
DOES Y VECTOR EXIST?
YES
S710
TRANSFORM Y COORDINATE
NO
S711
n ← n + 1

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FIG. 8A

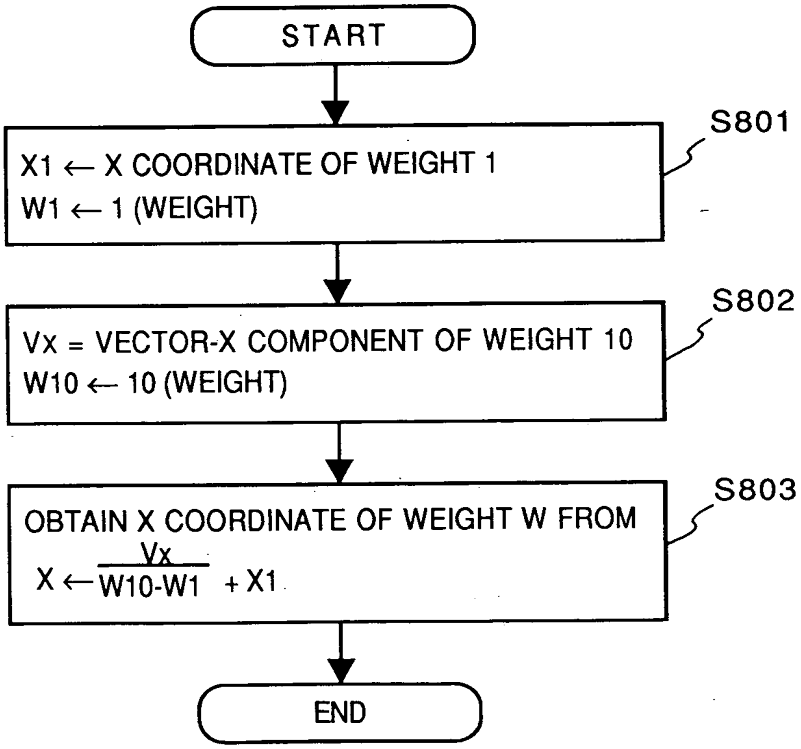
START
S801
X1 ← X COORDINATE OF WEIGHT 1
W1 ← 1 (WEIGHT)
S802
Vx = VECTOR-X COMPONENT OF WEIGHT 10
W10 ← 10 (WEIGHT)
S803
OBTAIN X COORDINATE OF WEIGHT W FROM
X ← Vx / W10-W1 + X1
END

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FIG. 8B

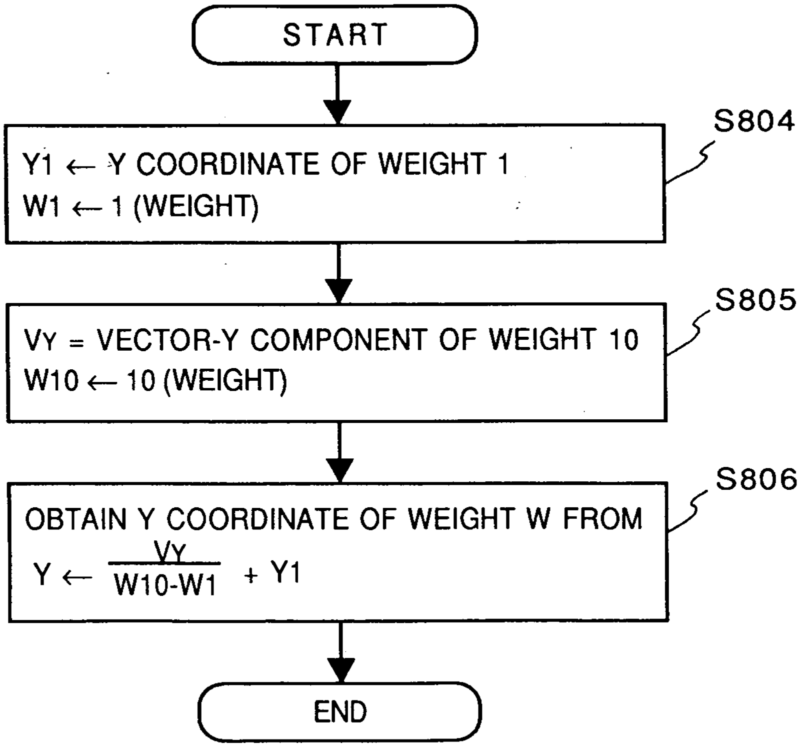
START
S804
Y1 ← Y COORDINATE OF WEIGHT 1
W1 ← 1 (WEIGHT)
S805
V_Y = VECTOR-Y COMPONENT OF WEIGHT 10
W10 ← 10 (WEIGHT)
S806
OBTAIN Y COORDINATE OF WEIGHT W FROM
$Y \leftarrow \frac{V_Y}{W10-W1} + Y1$
END

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FIG. 9

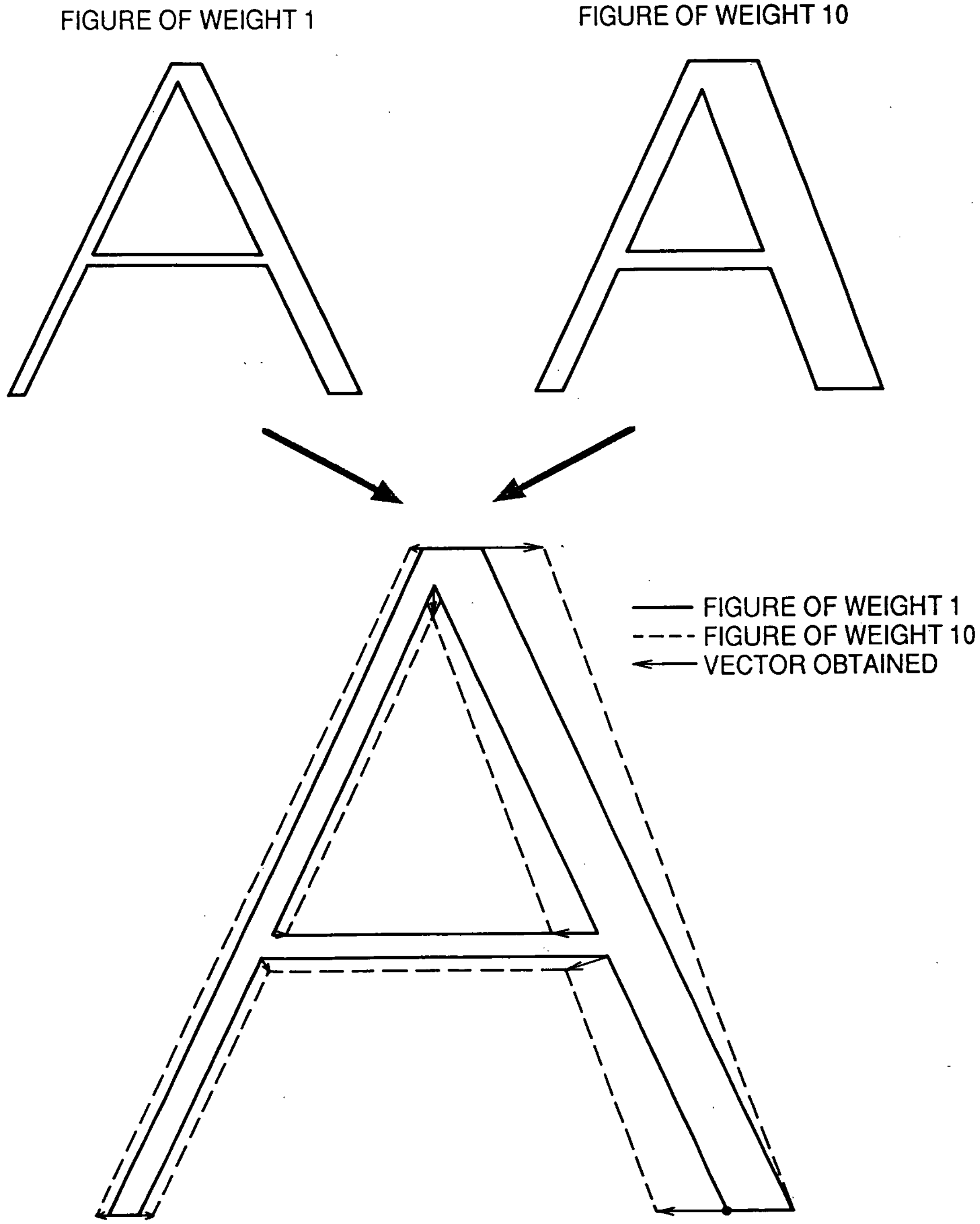
FIGURE OF WEIGHT 1
FIGURE OF WEIGHT 10
FIGURE OF WEIGHT 1
FIGURE OF WEIGHT 10
VECTOR OBTAINED

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FIG. 10

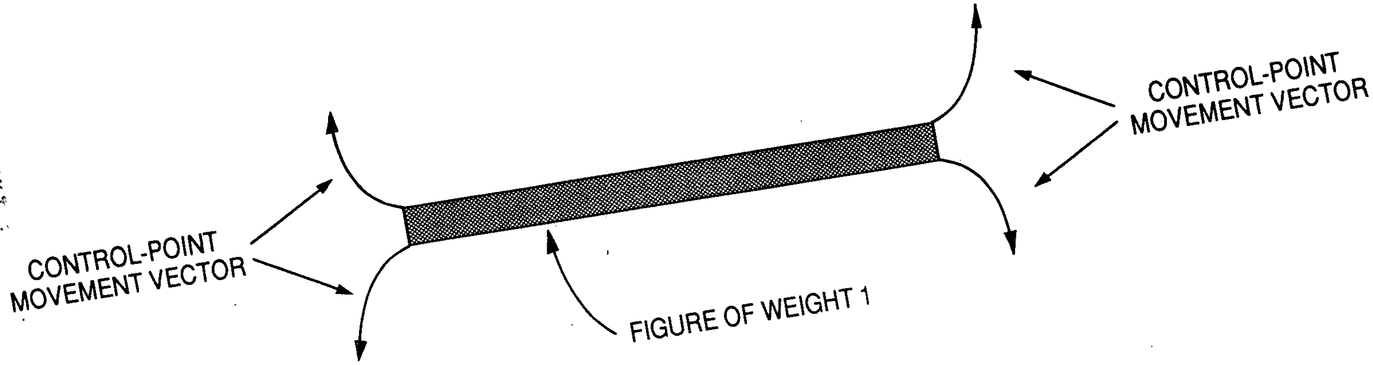
CONTROL-POINT
MOVEMENT VECTOR
CONTROL-POINT
MOVEMENT VECTOR
FIGURE OF WEIGHT 1

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FIG. 11

FLAG 1	FLAG 2	FLAG 3	FLAG 4	X	Y	VEC-X1	VEC-Y1	VEC-X2	VEC-Y2	VEC-X3	VEC-Y3
START	STR-LINE	0	1	100	130		-40				
	ST-C	1	1	343	100	-10	-15				
	INT-C	2	2	511	100	-20	28	-5	10.3		
	INT-C	3	2	511	410	-22	-43	-14	-10	-2.5	
	EN-C	1	1	343	410	-10	16				
END	STR-LINE	0	1	100	380		40				
START	STR-LINE	1	1	130	200	14	31				
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

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FIG. 12

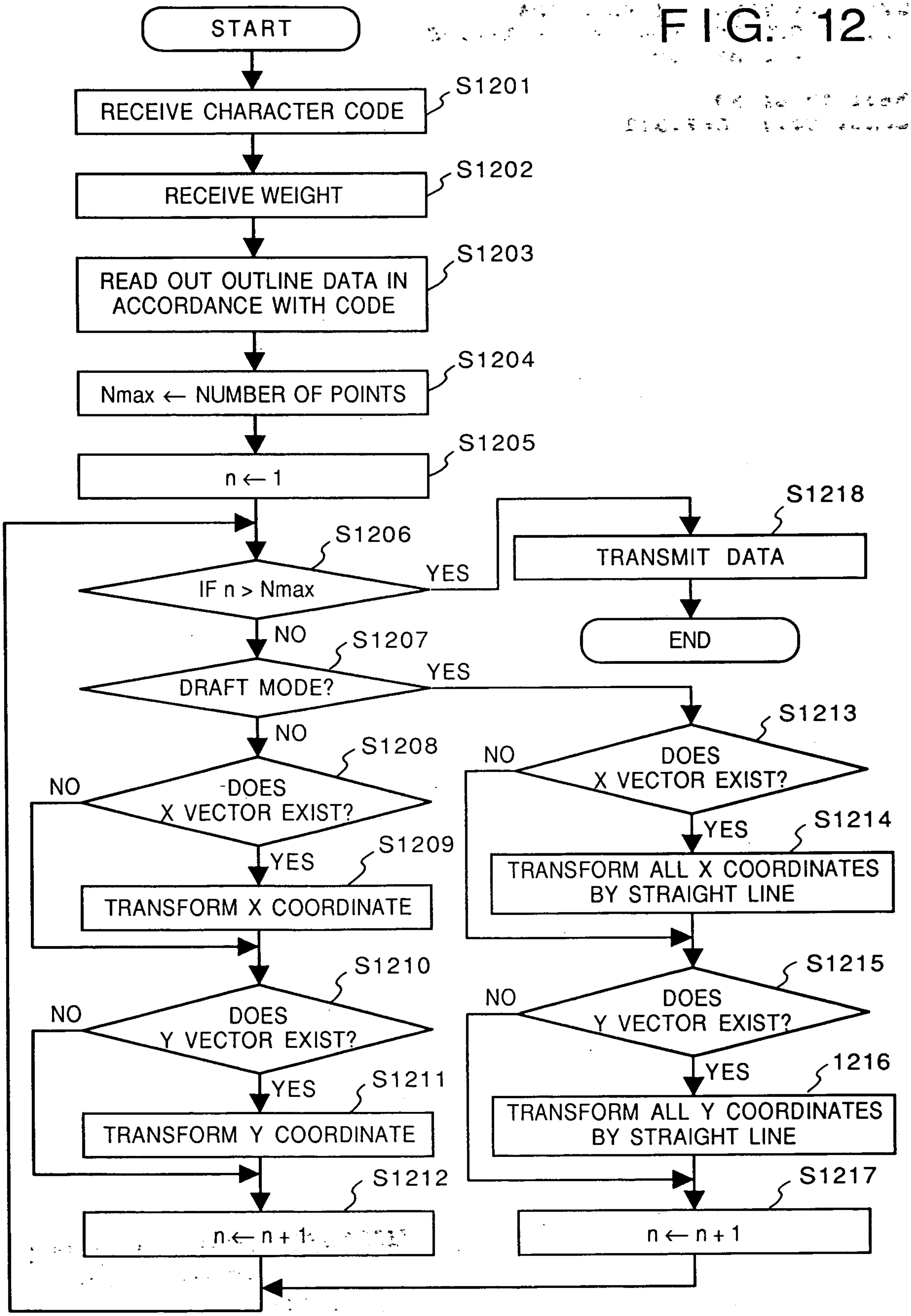
START
RECEIVE CHARACTER CODE
S1201
RECEIVE WEIGHT
S1202
READ OUT OUTLINE DATA IN ACCORDANCE WITH CODE
S1203
Nmax ← NUMBER OF POINTS
S1204
n ← 1
S1205
S1206
IF n > Nmax
YES
S1218
TRANSMIT DATA
END
NO
S1207
DRAFT MODE?
YES
NO
S1208
DOES X VECTOR EXIST?
NO
YES
S1209
TRANSFORM X COORDINATE
S1210
DOES Y VECTOR EXIST?
NO
YES
S1211
TRANSFORM Y COORDINATE
S1212
n ← n + 1
S1213
DOES X VECTOR EXIST?
NO
YES
S1214
TRANSFORM ALL X COORDINATES BY STRAIGHT LINE
S1215
DOES Y VECTOR EXIST?
NO
YES
1216
TRANSFORM ALL Y COORDINATES BY STRAIGHT LINE
S1217
n ← n + 1

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FIG. 13

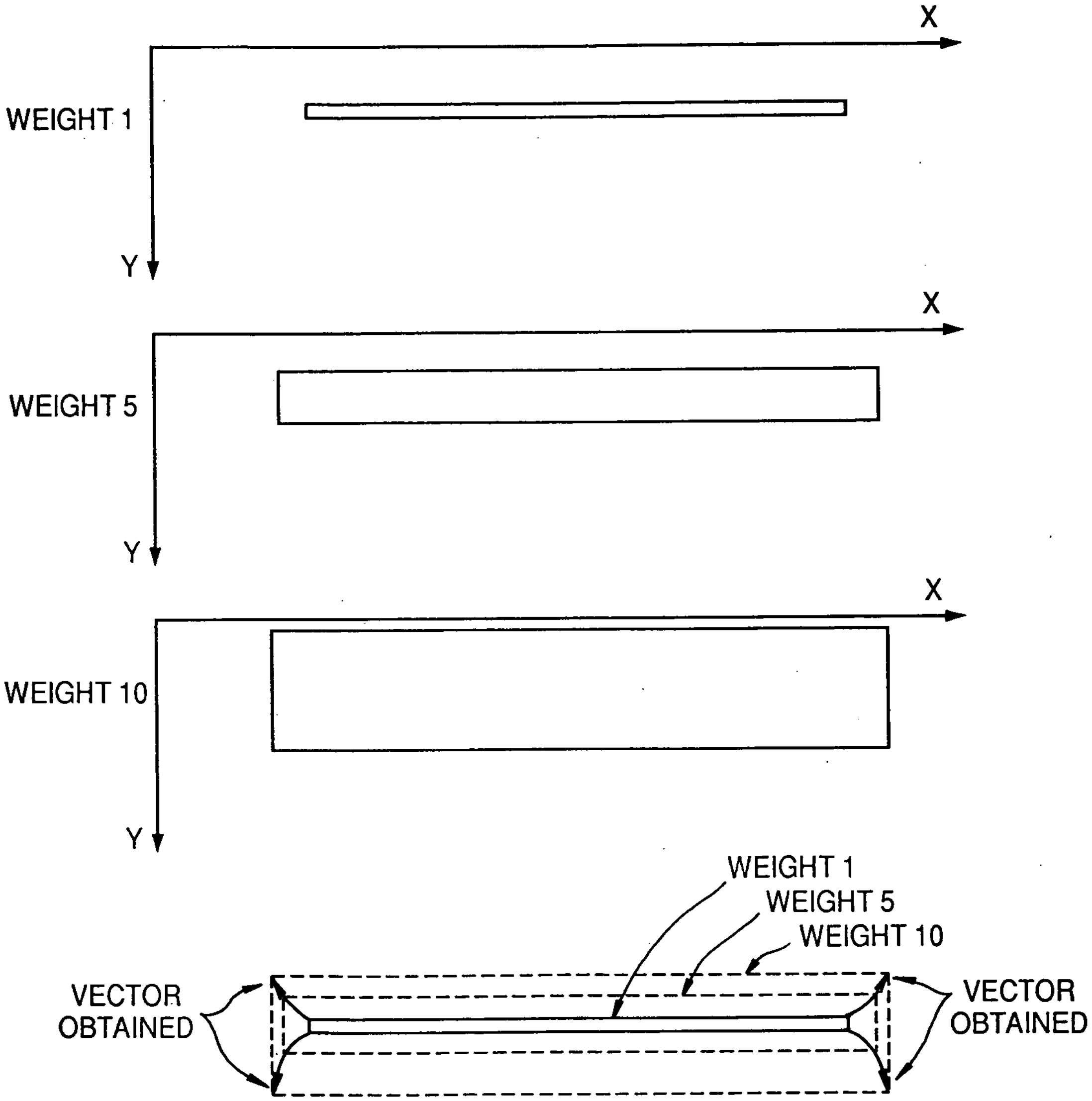
X
Y
WEIGHT 1
X
Y
WEIGHT 5
X
Y
WEIGHT 10
WEIGHT 1
WEIGHT 5
WEIGHT 10
VECTOR OBTAINED
VECTOR OBTAINED

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FIG. 14

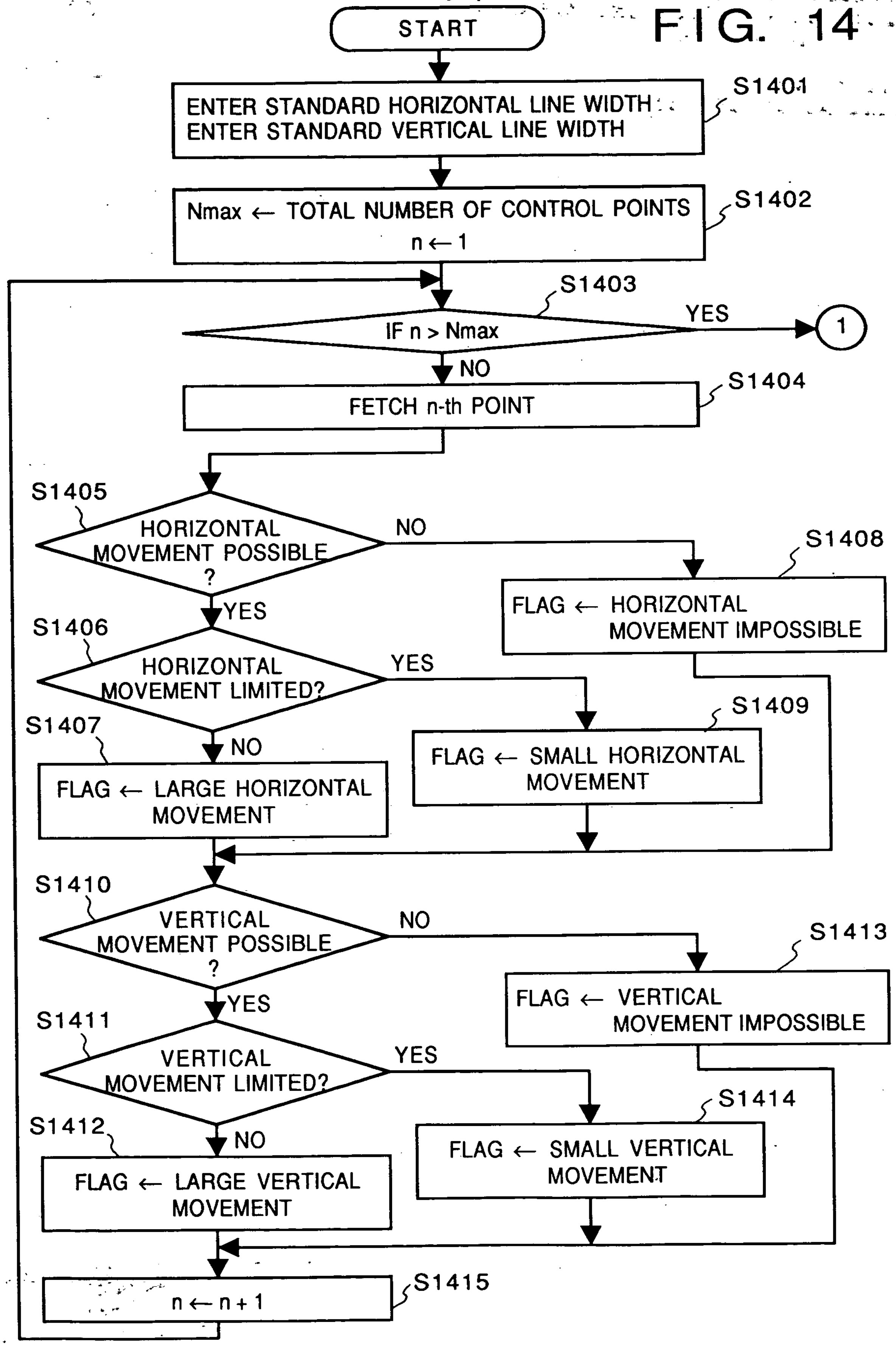
START
ENTER STANDARD HORIZONTAL LINE WIDTH
ENTER STANDARD VERTICAL LINE WIDTH
S1401
Nmax ← TOTAL NUMBER OF CONTROL POINTS
n ← 1
S1402
S1403
IF n > Nmax
YES
1
NO
FETCH n-th POINT
S1404
S1405
HORIZONTAL MOVEMENT POSSIBLE ?
NO
S1408
FLAG ← HORIZONTAL MOVEMENT IMPOSSIBLE
YES
S1406
HORIZONTAL MOVEMENT LIMITED?
YES
S1409
FLAG ← SMALL HORIZONTAL MOVEMENT
S1407
NO
FLAG ← LARGE HORIZONTAL MOVEMENT
S1410
VERTICAL MOVEMENT POSSIBLE ?
NO
S1413
FLAG ← VERTICAL MOVEMENT IMPOSSIBLE
YES
S1411
VERTICAL MOVEMENT LIMITED?
YES
S1414
FLAG ← SMALL VERTICAL MOVEMENT
S1412
NO
FLAG ← LARGE VERTICAL MOVEMENT
n ← n + 1
S1415

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FIG. 15

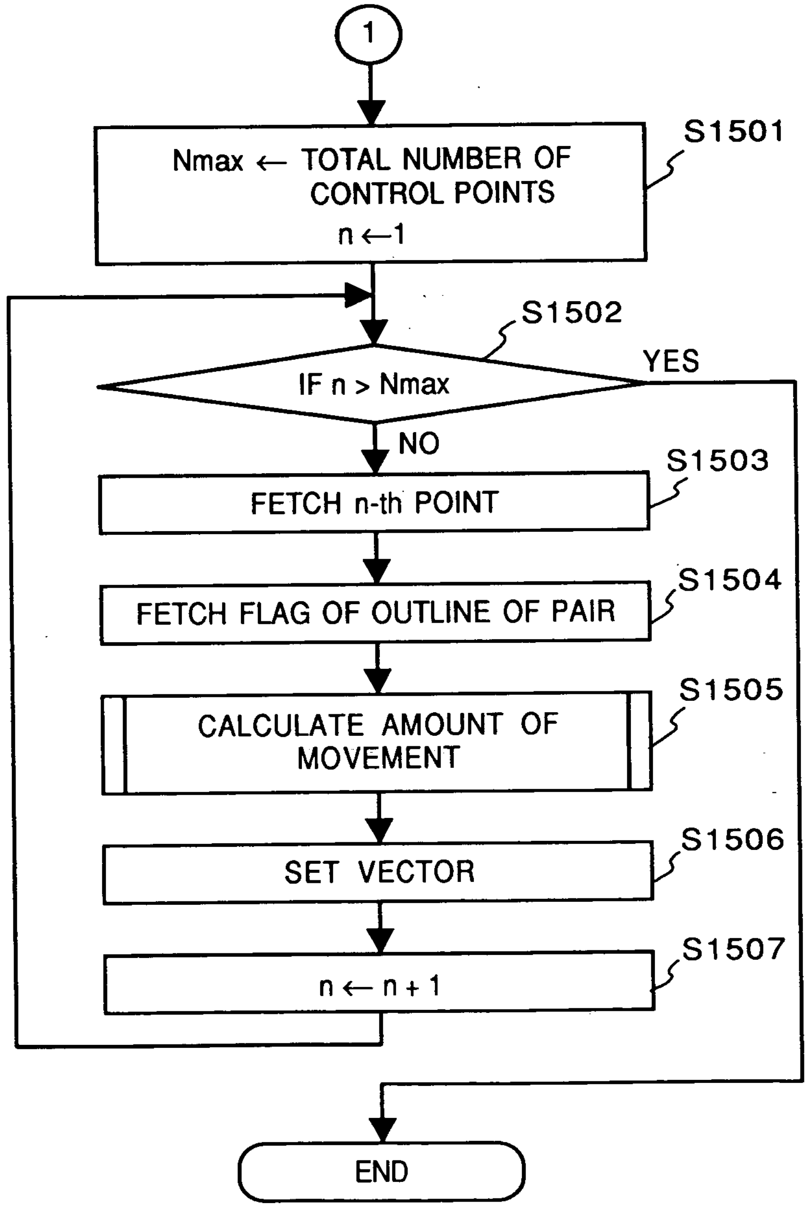
1
Nmax ← TOTAL NUMBER OF CONTROL POINTS
n ←1
S1501
S1502
IF n > Nmax
YES
NO
S1503
FETCH n-th POINT
S1504
FETCH FLAG OF OUTLINE OF PAIR
S1505
CALCULATE AMOUNT OF MOVEMENT
S1506
SET VECTOR
S1507
n ← n + 1
END

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FIG. 16

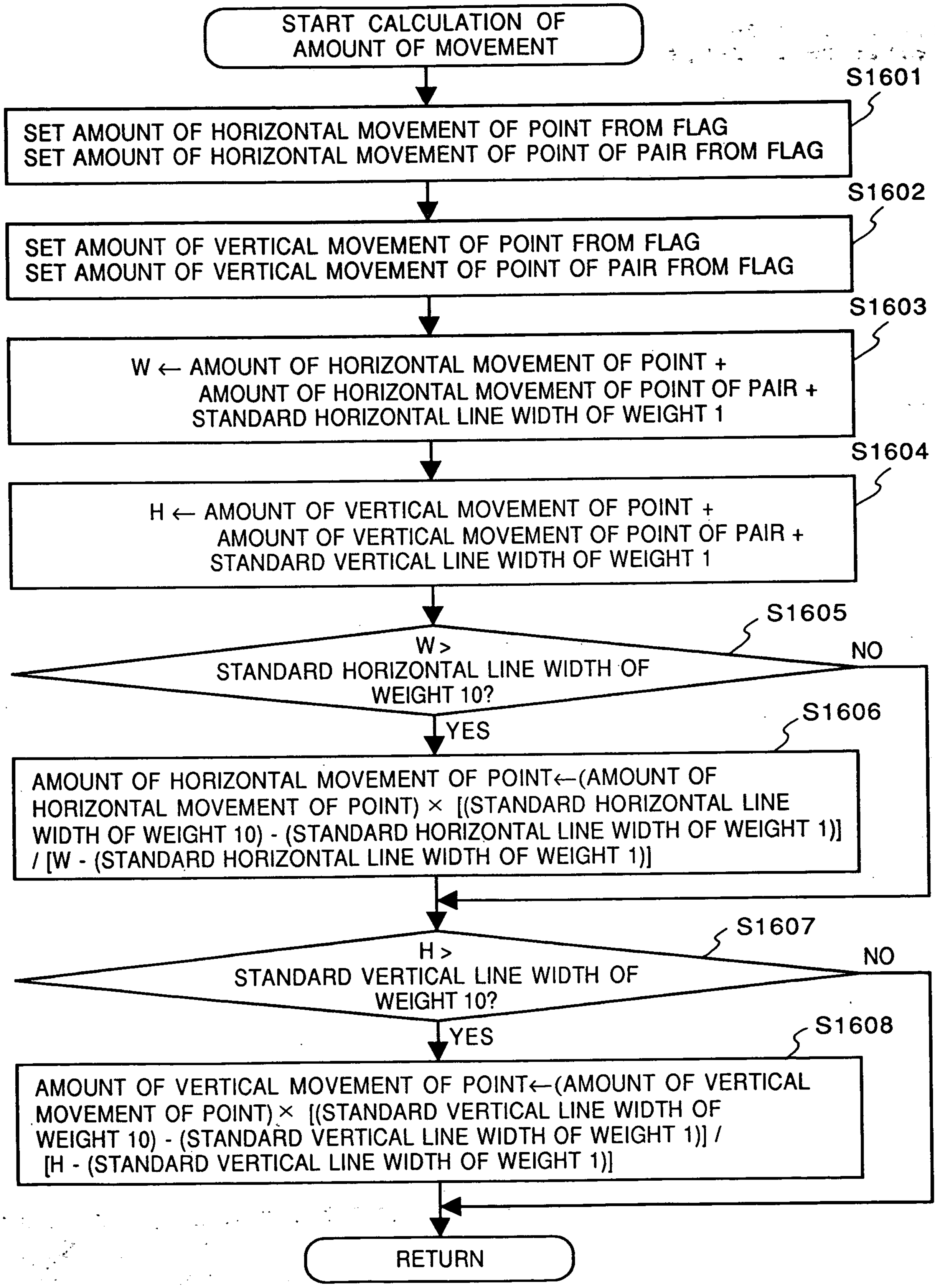
START CALCULATION OF AMOUNT OF MOVEMENT
S1601
SET AMOUNT OF HORIZONTAL MOVEMENT OF POINT FROM FLAG
SET AMOUNT OF HORIZONTAL MOVEMENT OF POINT OF PAIR FROM FLAG
S1602
SET AMOUNT OF VERTICAL MOVEMENT OF POINT FROM FLAG
SET AMOUNT OF VERTICAL MOVEMENT OF POINT OF PAIR FROM FLAG
S1603
W ← AMOUNT OF HORIZONTAL MOVEMENT OF POINT + AMOUNT OF HORIZONTAL MOVEMENT OF POINT OF PAIR + STANDARD HORIZONTAL LINE WIDTH OF WEIGHT 1
S1604
H ← AMOUNT OF VERTICAL MOVEMENT OF POINT + AMOUNT OF VERTICAL MOVEMENT OF POINT OF PAIR + STANDARD VERTICAL LINE WIDTH OF WEIGHT 1
S1605
W > STANDARD HORIZONTAL LINE WIDTH OF WEIGHT 10?
NO
YES
S1606
AMOUNT OF HORIZONTAL MOVEMENT OF POINT←(AMOUNT OF HORIZONTAL MOVEMENT OF POINT) × [(STANDARD HORIZONTAL LINE WIDTH OF WEIGHT 10) - (STANDARD HORIZONTAL LINE WIDTH OF WEIGHT 1)] / [W - (STANDARD HORIZONTAL LINE WIDTH OF WEIGHT 1)]
S1607
H > STANDARD VERTICAL LINE WIDTH OF WEIGHT 10?
NO
YES
S1608
AMOUNT OF VERTICAL MOVEMENT OF POINT←(AMOUNT OF VERTICAL MOVEMENT OF POINT) × [(STANDARD VERTICAL LINE WIDTH OF WEIGHT 10) - (STANDARD VERTICAL LINE WIDTH OF WEIGHT 1)] / [H - (STANDARD VERTICAL LINE WIDTH OF WEIGHT 1)]
RETURN

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FIG. 17

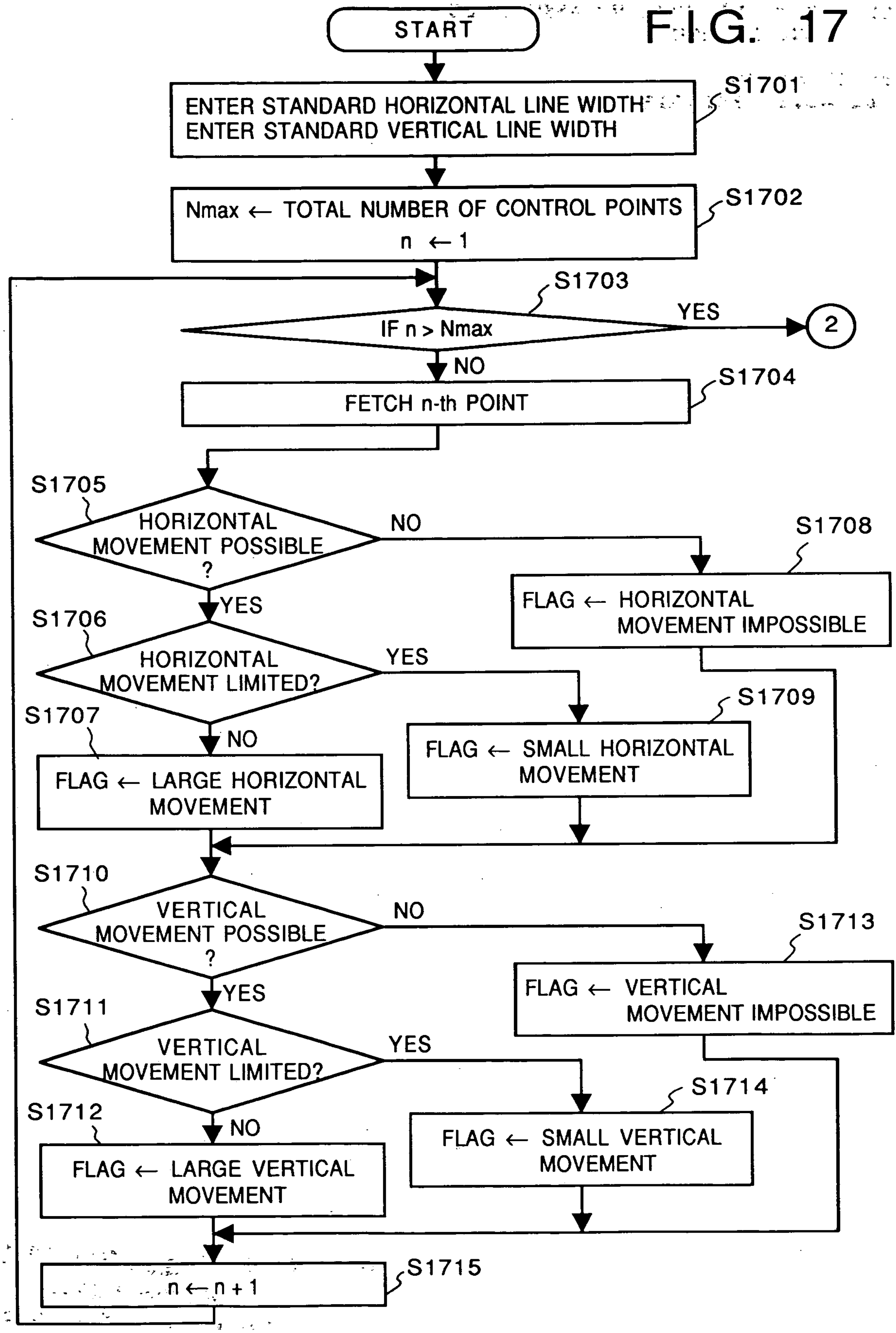
START
ENTER STANDARD HORIZONTAL LINE WIDTH
ENTER STANDARD VERTICAL LINE WIDTH
S1701
Nmax ← TOTAL NUMBER OF CONTROL POINTS
n ← 1
S1702
S1703
IF n > Nmax
YES
2
NO
FETCH n-th POINT
S1704
S1705
HORIZONTAL MOVEMENT POSSIBLE ?
NO
S1708
FLAG ← HORIZONTAL MOVEMENT IMPOSSIBLE
YES
S1706
HORIZONTAL MOVEMENT LIMITED?
YES
S1709
FLAG ← SMALL HORIZONTAL MOVEMENT
S1707
NO
FLAG ← LARGE HORIZONTAL MOVEMENT
S1710
VERTICAL MOVEMENT POSSIBLE ?
NO
S1713
FLAG ← VERTICAL MOVEMENT IMPOSSIBLE
YES
S1711
VERTICAL MOVEMENT LIMITED?
YES
S1714
FLAG ← SMALL VERTICAL MOVEMENT
S1712
NO
FLAG ← LARGE VERTICAL MOVEMENT
n ← n + 1
S1715

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FIG. 18

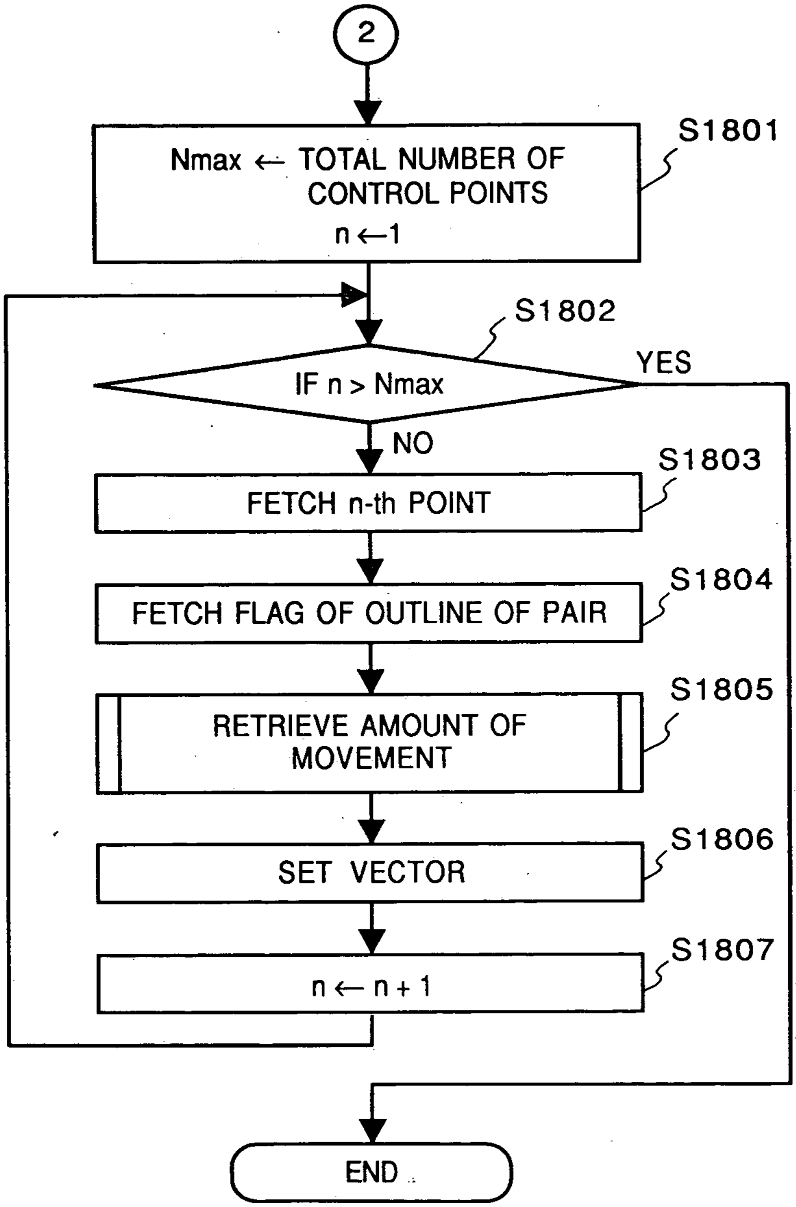
2
Nmax ← TOTAL NUMBER OF CONTROL POINTS
n ← 1
S1801
S1802
IF n > Nmax
YES
NO
S1803
FETCH n-th POINT
S1804
FETCH FLAG OF OUTLINE OF PAIR
S1805
RETRIEVE AMOUNT OF MOVEMENT
S1806
SET VECTOR
S1807
n ← n + 1
END

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FIG. 19

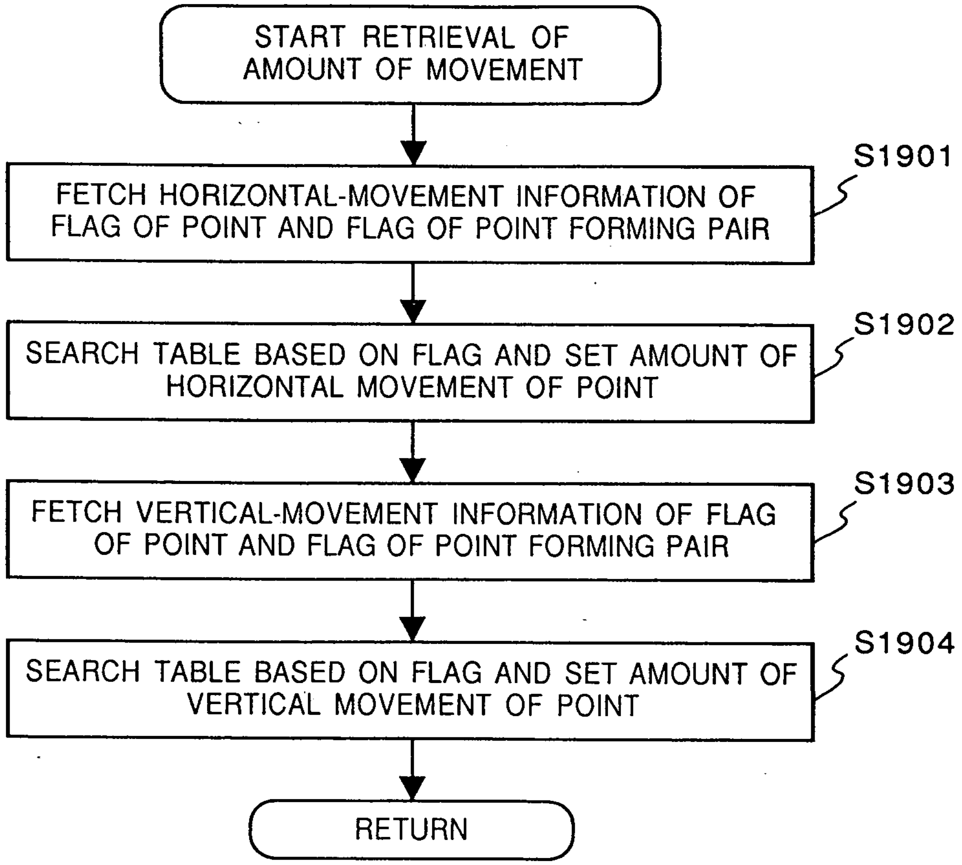
START RETRIEVAL OF AMOUNT OF MOVEMENT
FETCH HORIZONTAL-MOVEMENT INFORMATION OF FLAG OF POINT AND FLAG OF POINT FORMING PAIR
S1901
SEARCH TABLE BASED ON FLAG AND SET AMOUNT OF HORIZONTAL MOVEMENT OF POINT
S1902
FETCH VERTICAL-MOVEMENT INFORMATION OF FLAG OF POINT AND FLAG OF POINT FORMING PAIR
S1903
SEARCH TABLE BASED ON FLAG AND SET AMOUNT OF VERTICAL MOVEMENT OF POINT
S1904
RETURN

FIG. 20

HORIZONTAL-MOVEMENT TABLE

FLAG OF POINT	FLAG OF POINT OF PAIR	ABSOLUTE VALUE OF AMOUNT OF MOVEMENT
MOVEMENT IMPOSSIBLE	MOVEMENT IMPOSSIBLE	0
MOVEMENT IMPOSSIBLE	SMALL AMOUNT OF MOVEMENT	0
MOVEMENT IMPOSSIBLE	LARGE AMOUNT OF MOVEMENT	0
SMALL AMOUNT OF MOVEMENT	MOVEMENT IMPOSSIBLE	10
SMALL AMOUNT OF MOVEMENT	SMALL AMOUNT OF MOVEMENT	16
SMALL AMOUNT OF MOVEMENT	LARGE AMOUNT OF MOVEMENT	7
LARGE AMOUNT OF MOVEMENT	MOVEMENT IMPOSSIBLE	20
LARGE AMOUNT OF MOVEMENT	SMALL AMOUNT OF MOVEMENT	13
LARGE AMOUNT OF MOVEMENT	LARGE AMOUNT OF MOVEMENT	10

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FIG. 21

VERTICAL-MOVEMENT TABLE

FLAG OF POINT	FLAG OF POINT OF PAIR	ABSOLUTE VALUE OF AMOUNT OF MOVEMENT
MOVEMENT IMPOSSIBLE	MOVEMENT IMPOSSIBLE	0
MOVEMENT IMPOSSIBLE	SMALL AMOUNT OF MOVEMENT	0
MOVEMENT IMPOSSIBLE	LARGE AMOUNT OF MOVEMENT	0
SMALL AMOUNT OF MOVEMENT	MOVEMENT IMPOSSIBLE	7
SMALL AMOUNT OF MOVEMENT	SMALL AMOUNT OF MOVEMENT	13
SMALL AMOUNT OF MOVEMENT	LARGE AMOUNT OF MOVEMENT	5
LARGE AMOUNT OF MOVEMENT	MOVEMENT IMPOSSIBLE	14
LARGE AMOUNT OF MOVEMENT	SMALL AMOUNT OF MOVEMENT	10
LARGE AMOUNT OF MOVEMENT	LARGE AMOUNT OF MOVEMENT	7

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FIG. 22

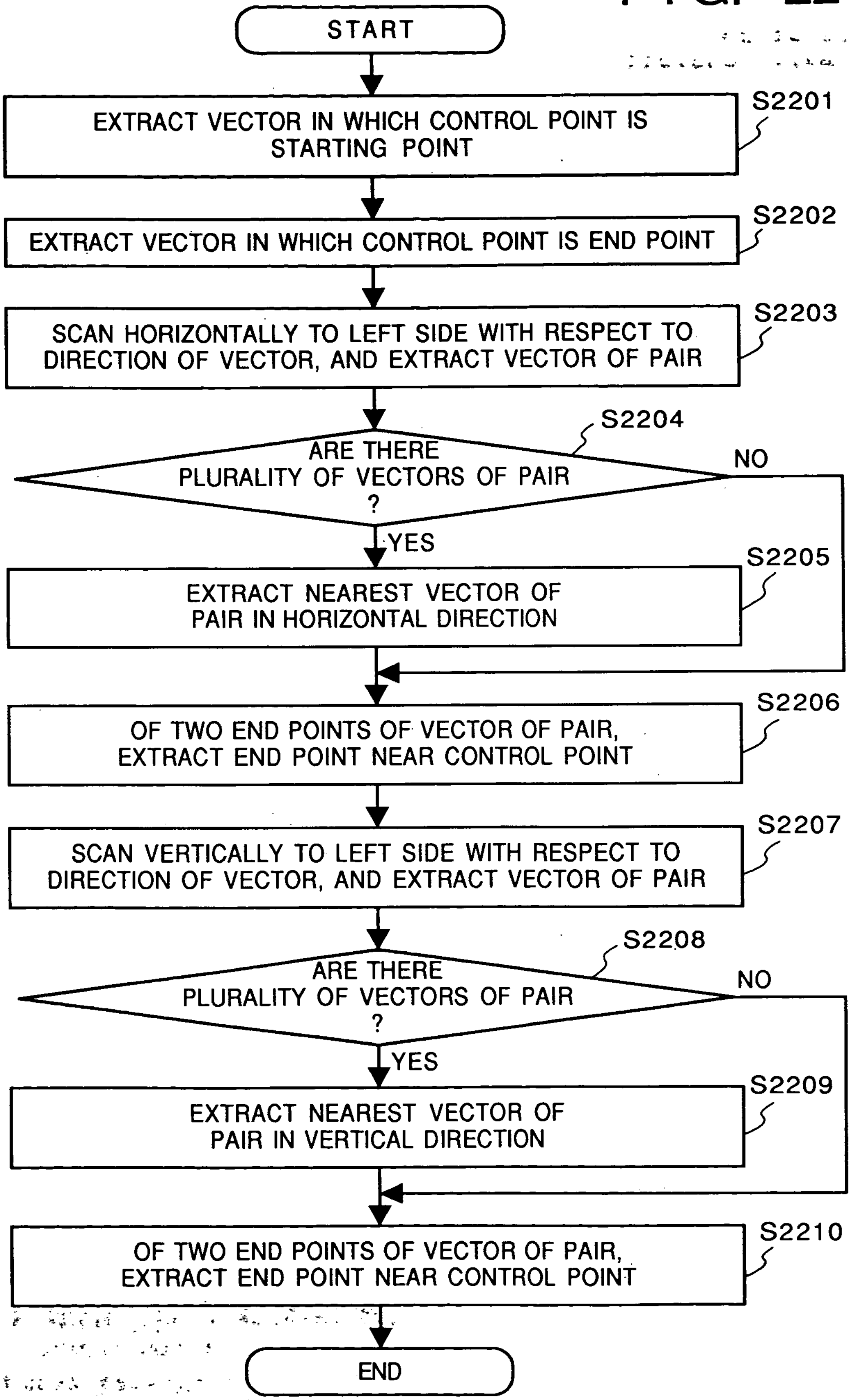
START
EXTRACT VECTOR IN WHICH CONTROL POINT IS STARTING POINT
S2201
EXTRACT VECTOR IN WHICH CONTROL POINT IS END POINT
S2202
SCAN HORIZONTALLY TO LEFT SIDE WITH RESPECT TO DIRECTION OF VECTOR, AND EXTRACT VECTOR OF PAIR
S2203
ARE THERE PLURALITY OF VECTORS OF PAIR ?
S2204
NO
YES
EXTRACT NEAREST VECTOR OF PAIR IN HORIZONTAL DIRECTION
S2205
OF TWO END POINTS OF VECTOR OF PAIR, EXTRACT END POINT NEAR CONTROL POINT
S2206
SCAN VERTICALLY TO LEFT SIDE WITH RESPECT TO DIRECTION OF VECTOR, AND EXTRACT VECTOR OF PAIR
S2207
ARE THERE PLURALITY OF VECTORS OF PAIR ?
S2208
NO
YES
EXTRACT NEAREST VECTOR OF PAIR IN VERTICAL DIRECTION
S2209
OF TWO END POINTS OF VECTOR OF PAIR, EXTRACT END POINT NEAR CONTROL POINT
S2210
END

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FIG. 23

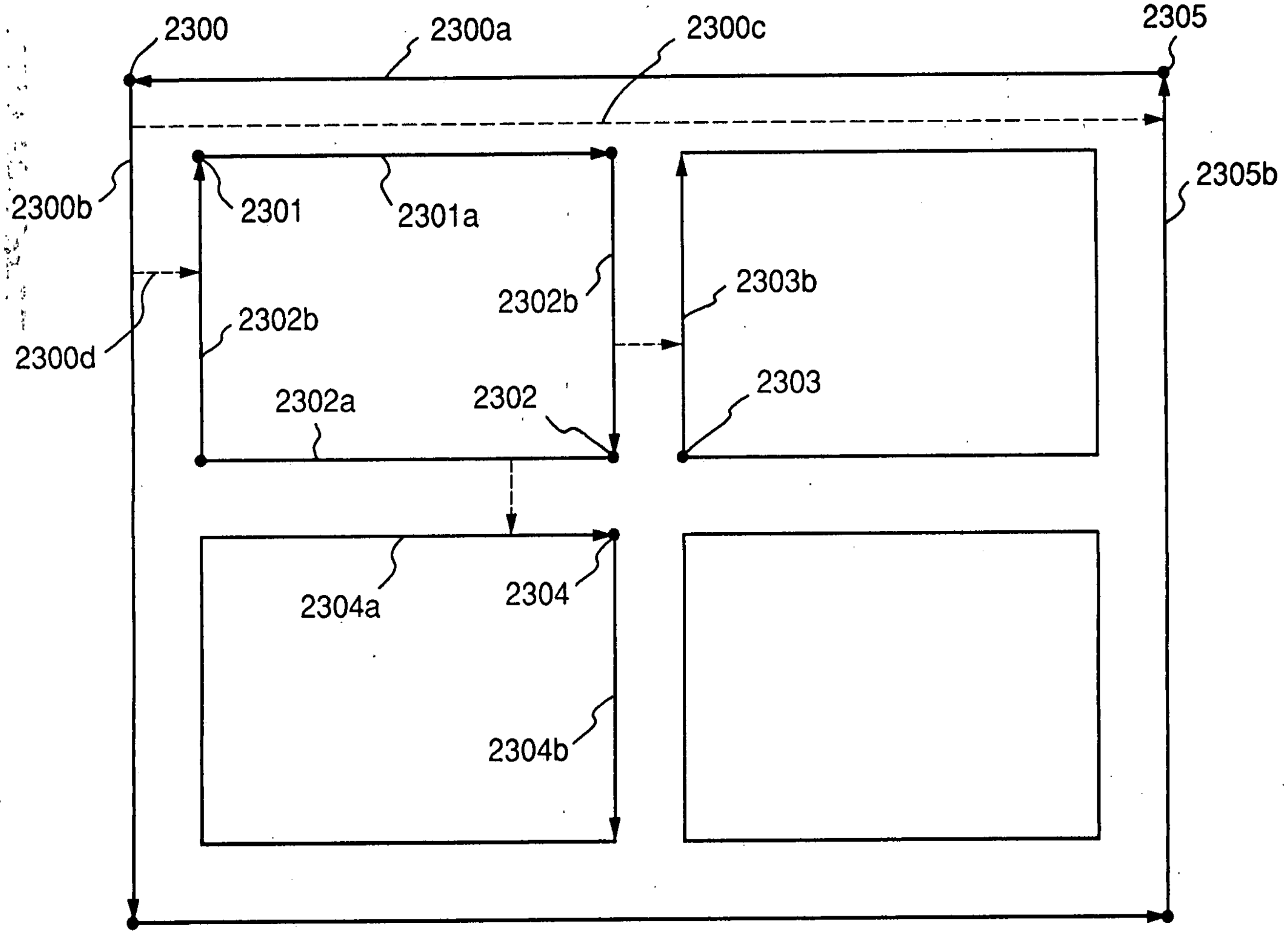
2300
2300a
2300c
2305
2300b
2301
2301a
2305b
2302b
2303b
2300d
2302b
2302a
2302
2303
2304a
2304
2304b

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FIG. 24

	FLAG 1	FLAG 2	FLAG 3	FLAG 4	FLAG 5	FLAG 6	X	Y	VEC-X1	VEC-Y1	VEC-X2	VEC-Y2
CONTROL-POINT a		STR-LINE	1	2	4	0	100	130	12	-40		-10
			0		0		112					
CONTROL-POINT b		STR-LINE	1	2	5	3	200	410	-25	20		10
			1	1		7	175	420	-10	15		
				0		0		435				
	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -

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FIG. 25

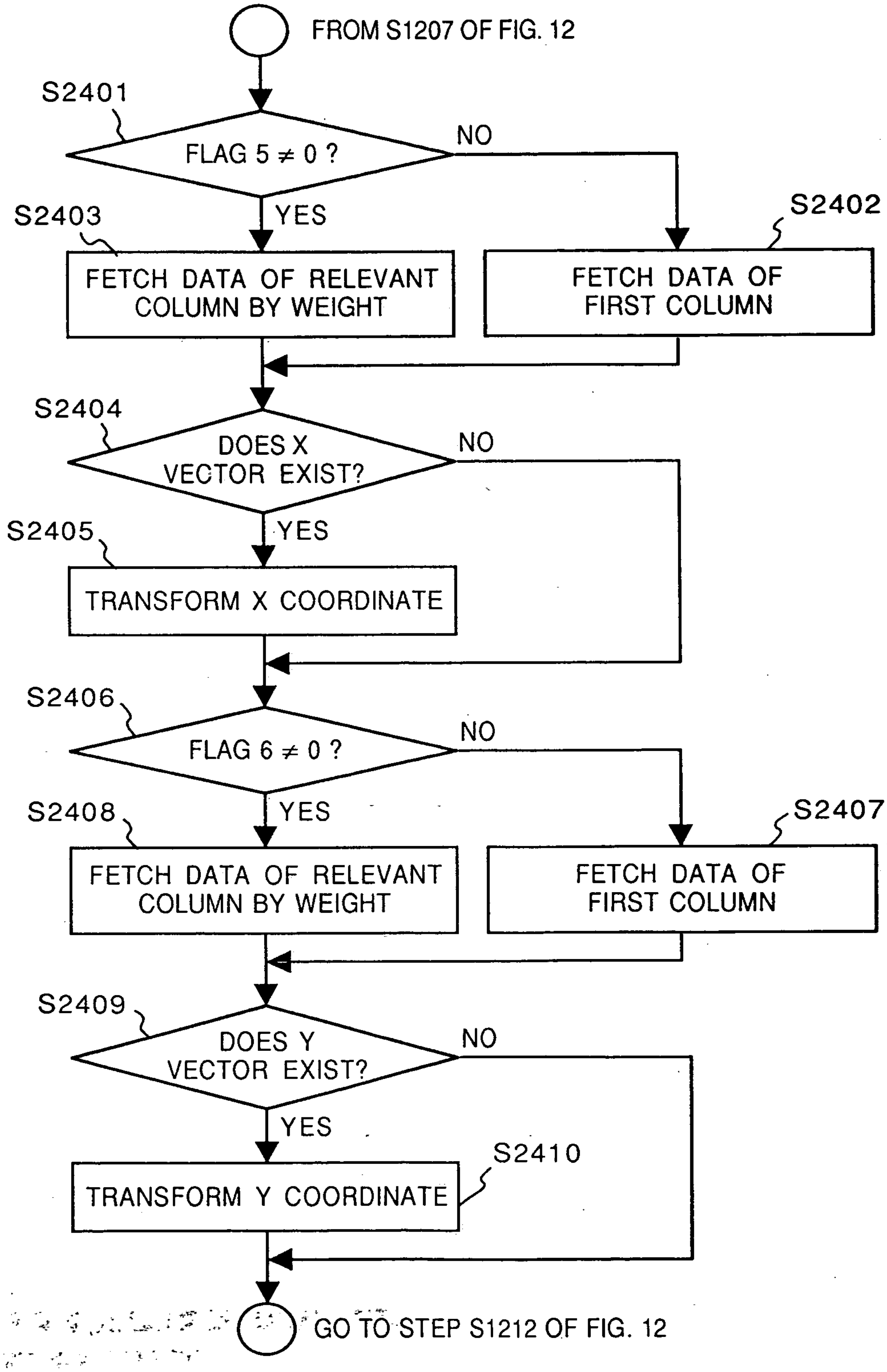
FROM S1207 OF FIG. 12
S2401
FLAG 5 ≠ 0 ?
NO
YES
S2403
FETCH DATA OF RELEVANT COLUMN BY WEIGHT
S2402
FETCH DATA OF FIRST COLUMN
S2404
DOES X VECTOR EXIST?
NO
YES
S2405
TRANSFORM X COORDINATE
S2406
FLAG 6 ≠ 0 ?
NO
YES
S2408
FETCH DATA OF RELEVANT COLUMN BY WEIGHT
S2407
FETCH DATA OF FIRST COLUMN
S2409
DOES Y VECTOR EXIST?
NO
YES
S2410
TRANSFORM Y COORDINATE
GO TO STEP S1212 OF FIG. 12

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FIG. 26

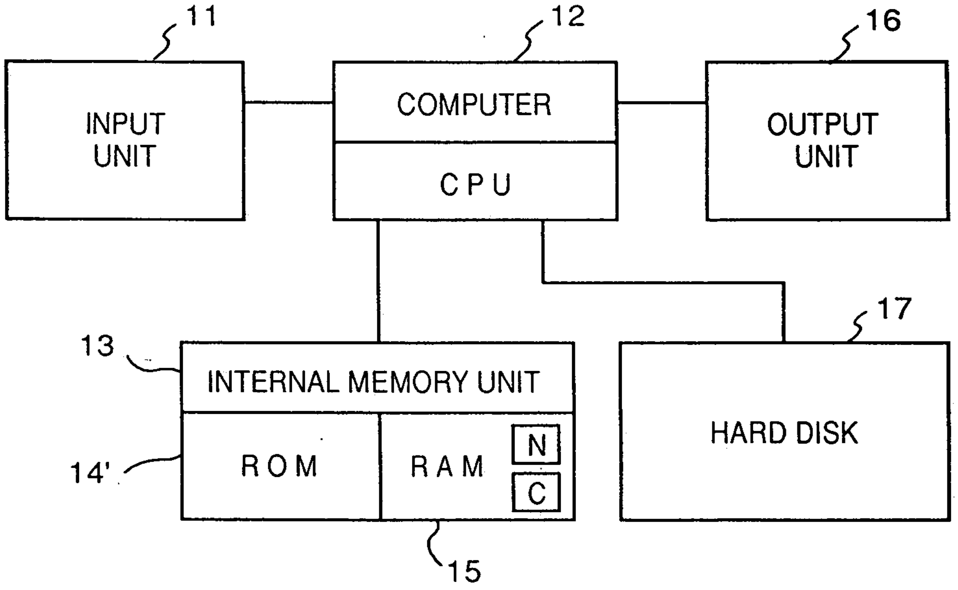
11
INPUT UNIT
12
COMPUTER
CPU
16
OUTPUT UNIT
13
INTERNAL MEMORY UNIT
14'
ROM
RAM
N
C
15
17
HARD DISK

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FIG. 27

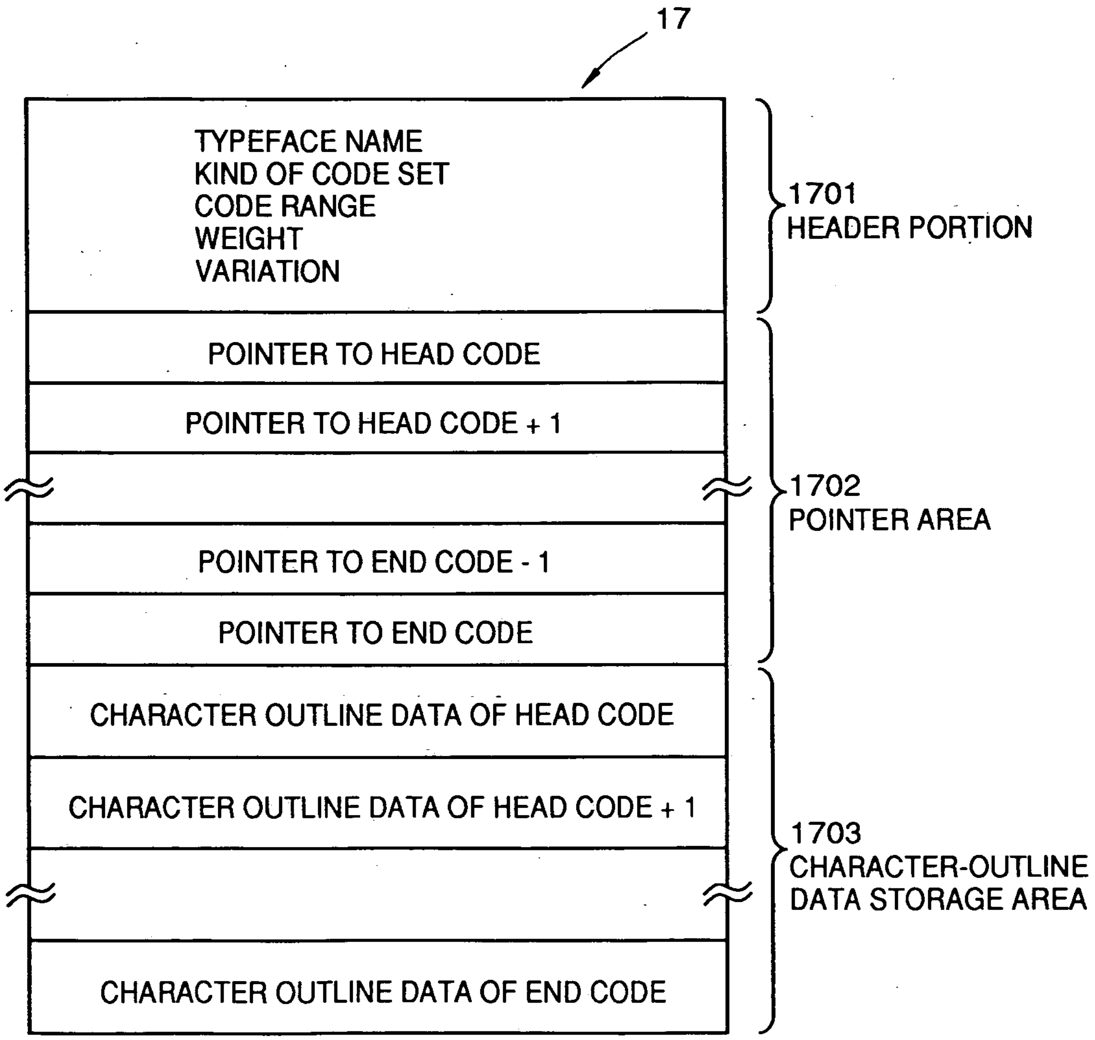
17
TYPEFACE NAME
KIND OF CODE SET
CODE RANGE
WEIGHT
VARIATION
1701
HEADER PORTION
POINTER TO HEAD CODE
POINTER TO HEAD CODE + 1
POINTER TO END CODE - 1
POINTER TO END CODE
1702
POINTER AREA
CHARACTER OUTLINE DATA OF HEAD CODE
CHARACTER OUTLINE DATA OF HEAD CODE + 1
CHARACTER OUTLINE DATA OF END CODE
1703
CHARACTER-OUTLINE DATA STORAGE AREA

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FIG. 28

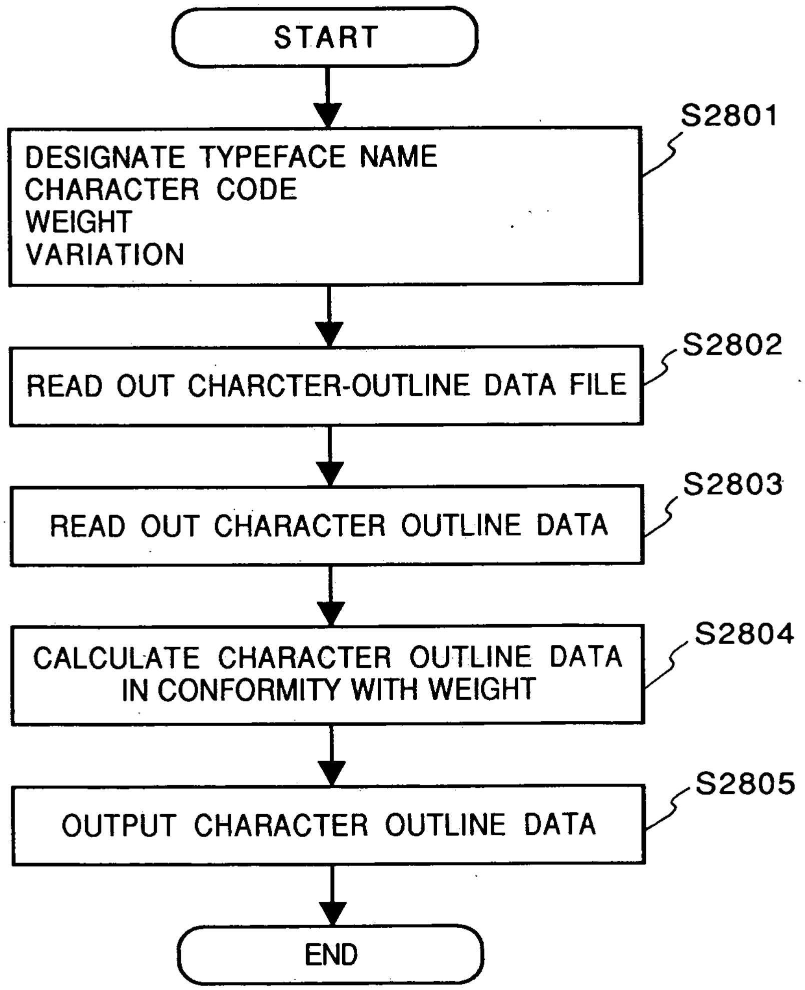
START
DESIGNATE TYPEFACE NAME
CHARACTER CODE
WEIGHT
VARIATION
S2801
READ OUT CHARCTER-OUTLINE DATA FILE
S2802
READ OUT CHARACTER OUTLINE DATA
S2803
CALCULATE CHARACTER OUTLINE DATA IN CONFORMITY WITH WEIGHT
S2804
OUTPUT CHARACTER OUTLINE DATA
S2805
END

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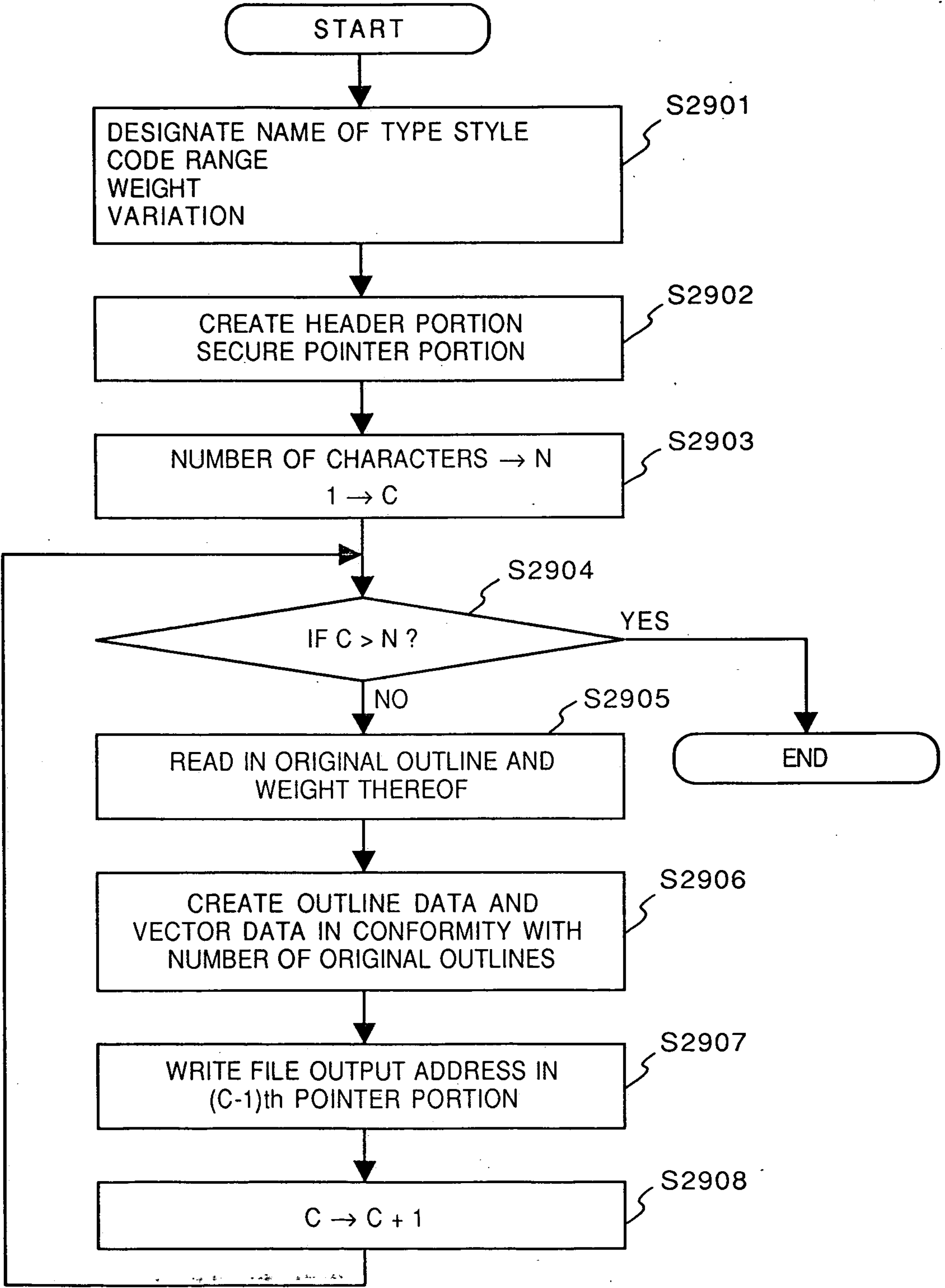
FIG. 29


START
DESIGNATE NAME OF TYPE STYLE
CODE RANGE
WEIGHT
VARIATION
S2901
CREATE HEADER PORTION
SECURE POINTER PORTION
S2902
NUMBER OF CHARACTERS → N
1 → C
S2903
S2904
IF C > N ?
YES
NO
END
S2905
READ IN ORIGINAL OUTLINE AND WEIGHT THEREOF
S2906
CREATE OUTLINE DATA AND VECTOR DATA IN CONFORMITY WITH NUMBER OF ORIGINAL OUTLINES
S2907
WRITE FILE OUTPUT ADDRESS IN (C-1)th POINTER PORTION
S2908
C → C + 1